

REMARKS

Claims 1-16 are canceled and claims 17-33 are added herein by amendment.

New Claims

New claims 17-32 are added herein by amendment. Independent claim 17 specifically recites:

"A method for implementing call routing by route service devices, to be used in a next generation network using soft switching to assert core control, comprising the following steps of:

(a) upon a user route change, a soft switching control device reports a change route information to a route service device at a father node, the changed route information includes user characteristics information, user node information and type of route operation;

(b) a route service device that received report of the change route information, searches a route information database for a record still pending registration of a user, and register a route record of the user to the route information database according to the reported change route information and content of the record of the user;

(c) for a route service device that has completed registration, when a route information of the user reflects a change between a local node and a father node, the route information reflecting the change is broadcasted to the father node;

(d) the route service device that received broadcasting follows a same method as the route service device that received report of the change route information to register and broadcast the received route information;

(e) when calling across domains, a soft switch control device which the calling belongs to initiates an inquiry to the route service device at the father node;

(f) a route service device upon receiving an inquiry request searches route information of a user from the route information database, if the user route is obtained or a result indicates the user does not exist, execute step (h), otherwise, execute step (g);

(g) the route service device continue to make inquiry of the route record to the local node, if there is no route record, continue to make inquiry to the father node, and return to step (f); and

(h) returning an inquiry result to the local node that initiated the inquiry, any local node that receives the inquiry result continue to return the inquiry result to the local node that made the inquiry, until returning to the soft switch control device which first made the inquiry."

Independent claim 18 specifically recites:

"A method for implementing call routing, to be used in a next generation network using a soft switch control device as a core control device, comprising implementing call routing by route service devices,

wherein implementing call routing by the route service devices comprises the following steps of:

(a) upon a user route change, the soft switch control device reporting a changed route information to a route service device at a father node, the changed route information including user characteristics information, user node information and route operation type;

(b) the route service device that received the reported changed route information looking up a record of a user to be registered from a route information database, and registering a route record of the user to the route information database according to the reported changed route information and content of the record of the user;

(c) when a route information of the user reflects a change between a local node and a father node, the route service device that finished registration broadcasting the route information reflecting the change to the father node;

(d) a route service device that received the broadcasted route information registering and broadcasting the received broadcasted route information according to the same method as the route service device that received the reported changed route information;

(e) when calling across domains, the soft switch control device to which the calling belongs to initiating an inquiry to the route service device at a father node;

(f) the route service device that received a request of the inquiry looking up a route record of a user to be looked up from the route information database, if an inquiring result of the route of the user or an inquiring

result indicates that the user does not exist is obtained, performing step (h), otherwise, performing step (g);

(g) the route service device continuing an inquiry to a node in said route record, if there is no route record, continuing an inquiry to its father node, and returning to step (f); and

(h) returning the inquiring result to the node that initiated the inquiry, any node that receives the inquiring result continuing to return the inquiring result, until returning to the soft switch control device which first initiated the inquiry."

With regard to steps (a) in both claims 17 and 18, the triggering event that activates step (a) is "upon a user route change". Without this triggering event, remaining actions in steps (a), (b), (c), (d), (e), (f), (g) and (h) would not be activated. What constitutes "a user route change" is explained by way of an example on page 12, lines 14-21 of the written specification, such as when a user joins a soft switch device or when a user withdraws from a soft switch device, *inter alia*. In reviewing both Iyer et al. and Dobbins et al., there are no disclosures or teachings of a triggering event equivalent to "upon a user route change". Naturally, they also fail to disclose or teach equivalent remaining actions that would follow.

It is not the Applicant's contention that both prior art references would not have situations where a user joins a soft switch device or where a user withdraws from a soft switch device. The Applicant's contention is that these references simply do not address these issues. Consequently, they also do not address subsequent actions in steps (a), (b), (c), (d), (e), (f), (g) and

(h) that specifically addresses what happens when a user joins a soft switch device or a user withdraws from a soft switch device.

Independent claim 27 specifically recites:

"A route service device to be used in a next generation network, comprising:

- a route information database module,
- a route registration module,
- a route broadcast module, and
- a route inquiry module,

wherein the route information database module is for storing a route record of a user, inputting the route record of the user, and providing an interface for accessing the route record of the user;

wherein the route registration module is for receiving a route information reported or forwarded by the route broadcast module, looking up a record of a user to be registered from the route information database, and registering the route record of the user to the route information database according to the reported route information and content of the user record;

wherein the route broadcast module is for receiving a broadcasted route information, and when a route information of a user reflects a change between a local node and its father node, broadcasting the route information of the user reflecting the change to its father node; and

wherein the route inquiry module is for receiving or sending an inquiry request, looking up the a record of a user to be inquired from the route information database, returning an inquiring result to a node requesting the inquiry upon finding a route of the user, upon determining that there is no user or upon receiving an inquiring result provided by other nodes, otherwise, continuing an inquiry to the node in the route record, and if there is no route record, then continuing an inquiry to its father node."

Independent claim 27 specifically recited a condition "when a route information of a user reflects a change between a local node and its father node", a series of events would be implemented.

In reviewing both Iyer et al. and Dobbins et al., there are no

disclosures or teachings addressing these issues. Naturally, they also fail to disclose or teach the series of events that would be implemented thereafter.

As the explanation given hereinabove provides a macro view of the difference between the claimed invention and the applied prior art of record, detailed differences are noted herein below.

Claim Rejections under 35 U.S.C. §103

Claims 1-16 were rejected under 35 U.S.C. 103(a) as being unpatentable over Iyer et al (U.S. Published Patent Application No. 20040071131 A1) in view of Dobbins et al. (U.S. Patent No. 5485455 A). Applicants respectfully traverse this rejection for reasons stated herein below.

Since claims 1-16 are canceled, this rejection is moot.

To comment on the shortcomings of the applied prior art in rejecting claims 1-9, Iyer discloses a method of enforcing policy management on a Softswitch based architecture that may include interface to SS7 network. The method comprises receiving a new call from the TDM switch including PSTN, and translating the incoming call information to an access request in the form of a TCAP query message (paragraph [0009] of Iyer).

Comparing claim 1 of the present invention with Iyer, numerous distinguishing features exist thereinbetween:

1) The method for realizing call route as defined in claim 1 of the present invention comprises "implementing call routing by route service devices". Iyer fails to disclose this feature.

Although paragraph [0005] of Iyer mentions that "The Softswitch translates the control signals from the PSTN, such as those using SS7 signaling, to the signals used in the packet network, such as IP signaling", Iyer only discloses the background softswitch information. Iyer neither discloses "route service devices" nor defines the method for implementing call routing comprises implementing call routing by route service devices. In fact, the last four lines of paragraph [0020] of Iyer disclose making a decision to accept or reject a call by managing communications between policy systems and Softswitches, not implementing call routing by route service devices.

2) The method in claim 1 of the present invention comprises step (a): upon a user route change, the soft switch control device reporting a changed route information to a route service device at a father node, the changed route information including user characteristics information, user node information and route operation type. Iyer does not disclose these features.

Firstly, Iyer fails to disclose "upon a user route change, the soft switch control device reports a changed route information to a route service device". Paragraph [0002] of Iyer only discloses "managing communications between policy systems and Softswitches/Call Agents to manage calls". Paragraph [0005] of

Iyer only discloses background information of a Softswitch. Iyer does **not** disclose what actions the Softswitch would take upon user route changes. However, in claim 1 of this invention, upon a user route change, the soft switch control device reports a changed route information to a route service device. In other words, by claim 1 of this application, upon a user route of a soft switch control device change, this change will be reflected onto a route service device, which feature is not disclosed by Iyer.

Additionally, Iyer fails to disclose "reporting a changed route information to a route service device at a father node". In claim 1 of the present invention, the route service device is at the father node of the soft switch control device. Therefore, per claim 1 of this invention, each of the route service devices and each of the soft switch control devices form a system of nodes, and many nodes are networked in a layered form. However, Iyer fails to disclose the Softswitch and the policy system are networked in a layered form.

Furthermore, Iyer fails to disclose "the changed route information includes user characteristics information, user node information and type of route operation" in its paragraph [0005]. Referring to lines 5-7 of its paragraph [0021], "SCP26 is essentially a database or group of databases that include routing information, such as toll-free call routing and local number portability routing". The routing information in Iyer is information about toll-free call routing and local number

portability routing, **not** the changed route information including "user characteristics information, user node information and type of route operation".

3) The method in claim 1 of the present invention comprises step (b): the route service device that received the reported changed route information looks up a record of a user to be registered from a route information database, and registering a route record of the user to the route information database according to the reported changed route information and content of the record of the user. Iyer fails to disclose these features.

Firstly, Iyer does **not** disclose "the route service device that received the reported changed route information looks up a record of a user to be registered". Iyer only discloses that "SCP26 is essentially a database or group of databases that include routing information, such as toll-free call routing and local number portability routing" (paragraph [0021] of Iyer). Iyer **neither** discloses a route service device **nor** discloses looking up a record of a user to be registered from a route information database by a route service device that received the reported changed route information.

Secondly, Iyer fails to disclose "the route service device that received the reported changed route information looking up a record of a user to be registered from a route information database". Although Iyer discloses "a database or group of databases that include routing information" in its paragraph

[0021], the database disclosed by Iyer is quite different from the route information database as defined in claim 1 of this application. As mentioned above, the reported information in claim 1 of this application includes user characteristic information, user node information and type of route operation, while the route information in Iyer is about toll-free call routing and local number portability routing. Therefore, the database including routing information in Iyer is different from the route information database in claim 1 of this application.

Additionally, Iyer fails to disclose the route service device that received the reported changed route information registers a route record of the user to the route information database according to the reported changed route information and content of the record of the user. Referring to paragraphs [0016] and [0020] of Iyer, there are recitations that "the user information is transmitted to the policy system and the policy system either grants or denies the call" and "the MGC or the policy system making the decision to accept or reject the call". However, the policy system in Iyer, according to the transmitted user information, either grants or denies the call. It does **not** register a route record of the user to the route information database according to the reported changed route information and content of the record of the user, and there is **no need** to do so for the policy system in Iyer.

4) The method in claim 1 of the present invention comprises step (c): when a route information of the user reflects a change between a local node and a father node, the route service device that finished registration broadcasting the route information reflecting the change to the father node. Iyer fails to disclose this feature per admission by the Office.

5) The method in claim 1 of the present invention comprises step (d): a route service device that received the broadcasted route information registering and broadcasting the received broadcasted route information according to the same method as the route service device that received the reported changed route information. Iyer fails to disclose this feature per admission by the Office.

6) The method in claim 1 of the present invention comprises step (e): when calling across domains, the soft switch control device to which the calling belongs initiates an inquiry to the route service device at a father node. Iyer fails to disclose this feature.

In paragraph [0020], Iyer only describes that "The protocol converter may reside within another network device, such as the MGC or the policy system making the decision to accept or reject the call". It **cannot** be found that when calling across domains, the Softswitch to which the calling belongs initiates an inquiry. As mentioned above, Iyer fails disclose a "route service device". Additionally, in claim 1 of this invention, the route service

device is at a father node. However as mentioned above, Iyer fails to disclose that the Softswitch and the policy system are networked in a layered form. Therefore, Iyer fails to disclose the feature that "when calling across domains, the soft switch control device to which the calling belongs initiates an inquiry to the route service device at a father node".

7) The method in claim 1 of the present invention comprises step (f): the route service device that received a request of the inquiry looks up a route record of a user to be looked up from the route information database, if an inquiry result of the route of the user or an inquiry result indicates that the user does not exist, perform step (h), otherwise, perform step (g). Iyer fails to disclose these features.

In Iyer, "the user information is transmitted to the policy system and the policy system either grants or denies the call" (see paragraph [0016] of Iyer). It **cannot** be found that the policy system in Iyer looks up a route record of a user to be looked up from the route information database. As mentioned above, both the user information and database disclosed by Iyer are different from the route information and route information database defined by claim 1 of this invention. Therefore, Iyer fails to disclose "the route service device that received a request of the inquiry looking up a route record of a user to be looked up from the route information database".

From paragraphs [0016] and [0020] of Iyer, the policy system either grants or denies a call, making a decision to accept or reject the call, but it does not obtain an inquiry result of the route of the user or an inquiry result indicating that the user does not exist. Furthermore, Iyer neither determines whether an inquiry result of the route of the user or an inquiry result indicates that the user does not exist nor takes different actions according to different inquiry results.

8) The method in claim 1 of the present invention comprises step (g): the route service device continuing an inquiry to a node in said route record, if there is no route record, continuing an inquiry to its father node, and returning to step (f). Iyer fails to disclose these features.

In Iyer, "the user information is transmitted to the policy system and the policy system either grants or denies the call" (see paragraph [0016] of Iyer). That is to say, the policy system in Iyer either grants or denies the call, but it does **not** "continuing an inquiry to a node in said route record, if there is no route record, continuing an inquiry to its father node". Additionally, as mentioned above, Iyer fails to disclose that the Softswitch and the policy system are networked in a layered form, so the policy system in Iyer does **not** continue an inquiry to its father node.

9) The method in claim 1 of the present invention comprises step (h): returning the inquiry result to the node that initiated

the inquiry, any node that receives the inquiry result continuing to return the inquiry result, until returning to the soft switch control device which first initiated the inquiry. Iyer fails to disclose these features.

In Iyer, "The MGC or Softswitch would wait until receiving the call disposition message to proceed with the call" (see paragraph [0023] of Iyer). However in claim 1 of the present invention, the route service device returns an inquiry result to the node that initiated the inquiry, which is not disclosed by Iyer. In Iyer, the policy system either grants or denies the call, but does not return an inquiry result.

Additionally, in Iyer, "The message within which the call is either granted or denied will be referred to as a call disposition message" (see paragraph [0024] of Iyer). The "call disposition message" refers to the call being granted or denied. However, by claim 1 of this application, the returned result is the route information including user characteristics information, user node information and route operation type, which are **not** disclosed by Iyer.

Furthermore, as mentioned above, Iyer fails to disclose that the Softswitch and the policy system are networked in a layered form. Therefore, Iyer does **not** disclose that "any node that receives the inquiring result continuing to return the inquiring result, until returning to the soft switch control device which first initiated the inquiry".

Therefore, by employing the method defined in claim 1 of the present invention, with the above distinguishing features, when the user route information of one soft switch control device changes, this change will be reflected onto the route service device; when other soft switch control devices call the user, they can obtain the soft switch control device which the user belongs to by inquiring the route service device. Therefore, the present invention eliminates maintenance of any complex route information for the soft switch control device, enables the soft switch control device to be absorbed in provision of service while without the management of route, and also provides a scheme of large scale networking at telecommunication level for the soft switch control device (please refer to the last paragraph of the description).

Iyer neither discloses the above distinguishing features nor provides any teachings to a person having ordinary skill in the art leading to claim 1 of the present invention.

It is apparent that Dobbins fails to disclose the above distinguishing features as well. What Dobbins discloses is an apparatus and method for establishing a "virtual connection" through packet switched data communication networks as clearly addressed in lines 1-2 of the abstract of Dobbins. The method defined in claim 1 of this invention comprises implementing call routing by route service devices. In other words, claim 1 of the present invention is about providing telephone service based on soft switch. Therefore, both the technical field and the technical

problem to be solved between the present invention and Dobbins are completely different.

Specifically, Dobbins fails to teach the above enumerated distinguishing features 1) - 3) and 6) - 9). Regarding distinguishing feature 4), there is recitation in column 14 lines 37-58 of Dobbins stating that "As the cell is forwarded to a switch, its header is modified with "next switch" routing information". Clearly in Dobbins, when a cell is forwarded to a next switch, its header needs to be modified to the routing information of the next switch. However, claim 1 of the present invention does not need to do so. In claim 1 of this invention, the routing information being broadcasted to the father node is a route information including user characteristics information, user node information and route operation type, which are **not** disclosed in Dobbins. Additionally, as mentioned above, by claim 1 of this invention, each of the route service devices and each of the soft switch control device form a system of nodes, and the nodes are networked in a layered form. However, from Figure 1 of Dobbins, it is apparent that the system in Dobbins is **not** networked in a layered form. Therefore, Dobbins fails to teach distinguishing feature 4).

Regarding distinguishing feature 5), Dobbins mainly describes the interaction of the host agent, switch, SCS and end system in column 16 lines 19-35 and FIG. 7B-7C. However, Dobbins does **not** disclose "a route service device that received the broadcasted route information registering and broadcasting the

received broadcasted route information according to the same method as the route service device that received the reported changed route information". From claim 1 of the present invention, it is apparent that the route service device that received the reported changed route information looks up a record of a user to be registered from a route information database, and registers a route record of the user to the route information database according to the reported changed route information and content of the record of the user. However, Dobbins fails to disclose this feature. Therefore, Dobbins fails to teach distinguishing feature 5).

Regarding claims 10-16, the technical problem to be solved in the present invention is to provide a route service device employed in the next generation network, which can replace the soft switch device to maintain the user route information, and realizes the call route function. Iyer discloses a network device comprising a port to allow reception of a signaling system 7 TCAP query (paragraph [0008] on page 1 of Iyer).

Regarding claim 10 of the present invention, the following distinguishing features exist:

1) The route service device in claim 10 of the present invention comprises a route information database module for storing a route record of a user, inputting the route record of the user, and providing an interface for accessing the route record of the user. Iyer fails to disclose these features.

Iyert only describes "managing communications between policy systems and Softswitches/Call Agents to manage calls" in its paragraph [0002]. There is no recitation of "a route information database module" in Iyer. Iyer mainly discloses that each POP provides information to the policy system, "when the users access the network through the gateways, the user information is transmitted to the policy system and the policy system either grants or denies the call" as explained in its paragraphs [0016] and [0017]. There is not a route information database module for storing a route record of a user and inputting the route record of the user in Iyer. Additionally, the policy system in Iyer, according to the transmitted user information, either grants or denies a call, in fact, there is **no need** for a route information database module for storing a route record of a user and inputting the route record of the user in Iyer. Iyer fails to disclose a route information database module providing an interface for accessing the route record of the user.

Although Iyer discloses that "SCP26 is essentially a database or group of databases that include routing information" in its paragraph [0021], the database in Iyer only includes routing information, such as toll-free call routing and local number portability routing. Iyer **neither** disclose a route information database module **nor** discloses a route information database module storing a route record of a user, inputting the route record of

the user, and providing an interface for accessing the route record of the user.

2) The route service device in claim 10 of the present invention comprises a route registration module for receiving a route information reported or forwarded by the route broadcast module, looking up a record of a user to be registered from the route information database, and registering the route record of the user to the route information database according to the reported route information and content of the user record. Iyer fails to disclose this feature per admission by the Office.

3) The route service device in claim 10 of the present invention comprises a route broadcast module for receiving a broadcasted route information, and when a route information of a user reflects a change between a local node and its father node, broadcasting the route information of the user reflecting the change to its father node. Iyer fails to disclose this feature per admission by the Office.

4) The route service device in claim 10 of the present invention comprises a route inquiry module, wherein the route inquiry module is for receiving or sending an inquiry request, looking up a record of a user to be inquired from the route information database, returning an inquiring result to a node requesting the inquiry upon finding a route of the user, upon determining that there is no user or upon receiving an inquiry result provided by other nodes, otherwise, continuing an inquiry

to the node in the route record, and if there is no route record, then continuing an inquiry to its father node. Iyer fails to disclose this feature per admission by the Office.

Therefore, the route service device as defined in claim 10 of the present invention, with the above distinguishing features, makes the networking form of the soft switch control device more flexible. Any soft switch control device can make their user routes shared in the whole network as long as they are connected to the network by the route service device, without necessity to manually configure the route information from one soft switch device to another. Therefore, the present invention frees the soft switch control device from the maintenance of complex route information, enables the soft switch control device to be absorbed in provision of service while without the management of route, and also provides a scheme of large scale networking at telecommunication level for the soft switch control device (please refer to the last paragraph of the description).

Iyer neither discloses the above distinguishing features nor provides any teachings to a person of ordinary skill that would arrive at claim 10 of the present invention.

Dobbins does not teach the above distinguishing features as well. What Dobbins discloses is an apparatus and method for establishing "virtual connection" through packet switched data communication networks as noted in lines 1-2 of the abstract of Dobbins. Therefore, both the technical field and technical problem

to be solved between claim 10 of the present invention and Dobbins are completely different.

Specifically, Dobbins does not teach the above distinguishing feature 1). Regarding distinguishing feature 2), although Dobbins disclosed that "The discovery agent 88 provides a mapping of end systems to switching ports through a passive listening (snooping) capability and a registering of end system addresses and port locations of the host switch with an external directory located in the SCS" as explained in column 16 lines 12-67, Dobbins fails to disclose that the discovery agent is "for receiving a route information reported or forwarded by the route broadcast module, looking up a record of a user to be registered from the route information database, and registering the route record of the user to the route information database according to the reported route information and content of the user record". Therefore, Dobbins does not teach distinguishing feature 2).

Regarding distinguishing feature 3), what Dobbins discloses is "each switch receives cells from each port and then forwards them out the correct port (Unicast) or ports (Multicast)" (please refer to column 14 lines 37-58 of Dobbins). Therefore, in Dobbins, what is being received and broadcasted to the port(s) is the cell, but not "route information". And furthermore, Dobbins fails to disclose that a route broadcast module receives a broadcasted route information, and when a route information of a user reflects a change between a local node and its father node, broadcasts the

route information of the user reflecting the change to its father node. In claim 10 of the present invention, each of the route service devices and each of the soft switch control device form a system of nodes, and the nodes are networked in a layered form. However, from Figure 1 of Dobbins, the system disclosed therein is not networked in a layered form. Therefore, Dobbins fails to teach distinguishing feature 3.

Regarding distinguishing feature 4), Dobbins only discloses that "The call processor and the host agent determine whether it is a broadcast destination...", and "If the answer in step 309 is no, then the call processor treats it as an unknown connection (step 318), ask the SCS to set up the call (step 319) and discards the packet (step 320)" (please refer to column 16 lines 49-53 and column 17 lines 4-14 of Dobbins). Dobbins does not determine whether a route of the user is found, whether there is no user, or whether an inquiry result provided by other nodes is received, but only determines whether it is a broadcast destination. Additionally, Dobbins **neither** disclose "a route inquiry module" **nor** disclose a route inquiry module "for receiving or sending an inquiry request, looking up a record of a user to be inquired from the route information database, returning an inquiring result to a node requesting the inquiry upon finding a route of the user, upon determining that there is no user or upon receiving an inquiry result provided by other nodes, otherwise, continuing an inquiry to the node in the route record, and if there is no route record,

then continuing an inquiry to its father node". Therefore, Dobbins fails to teach distinguishing feature 4).

Thus, it is not obvious for one of ordinary skill in the art at the time of the invention was made to use the teachings of Dobbins to modify Iyer.

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Conclusion

There being no other rejections or objections, allowance of the claimed invention is respectfully requested. Should the Office believe a personal interview would advance the prosecution of this application, the Office is welcome to contact the Undersigned Attorney.

The Commissioner is hereby authorized to charge any underpayment of fees or credit any overpayment of fees in connection with this national phase application to Deposit Account Number 502840.

Respectfully submitted,
Lau & Associates, LLC.

A handwritten signature in black ink, reading "Michael Lau". The signature is fluid and cursive, with a long, sweeping underline that extends to the left.

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